

WHAT IS CLAIMED IS:

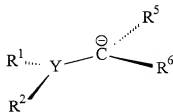
- 1 1. A ligand having the formula:



- 2 where

3 A is CH₂, CHR³, CR³R⁴, NR³, O, S, or PR³;
 4 R¹ and R² are independently hydrogen, aryl, C₆₋₁₅
 5 diarylphospho, C₁₋₁₈ alkylthio, C₆₋₁₅ arylthio, C₇₋₁₅ aralkyl, C₁₋
 6 ₁₀ alkoxy, C₆₋₁₄ aryloxy, C₁₋₁₀ dialkylamino, or C₆₋₁₅
 7 diarylamino; and
 8 Y is B, Al, or Ga.

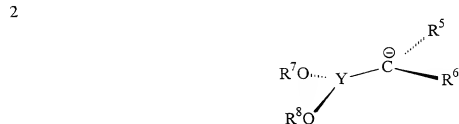
- 1 2. The ligand of claim 1 having the formula:



- 2 where

3 R⁵ and R⁶ are independently hydrogen, C₁₋₈ alkyl, C₆₋₁₀ aryl,
 4 C₇₋₁₅ aralkyl, C₁₋₁₀ alkoxy, C₆₋₁₄ aryloxy, C₁₋₁₀ dialkylamino,
 5 or C₆₋₁₅ diarylamino.

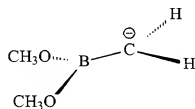
- 1 3. The ligand of claim 1 having the formula:



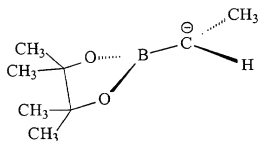
3 where

4 R^7 and R^8 are independently C_{1-8} alkyl, C_{6-10} aryl, or C_{7-15}
 5 aralkyl.

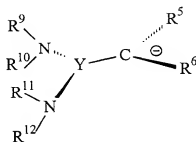
1 4. The ligand of claim 3 having the formula:



1 5. The ligand of claim 3 having the formula:



1 6. The ligand of claim 2 having the formula:

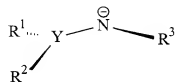


2 where

3 R^9 , R^{10} , R^{11} , and R^{12} are independently C_{1-8} alkyl, C_{6-10} aryl,
 4 or C_{7-15} aralkyl.

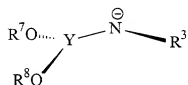
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7. The ligand of claim 1 having the formula:



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8. The ligand of claim 7 having the formula:



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where

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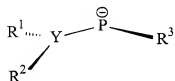
R⁷ and R⁸ are independently C₁₋₈ alkyl, C₆₋₁₀ aryl, or C₇₋₁₅

4

aralkyl.

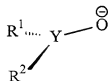
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9. The ligand of claim 1 having the formula:

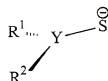


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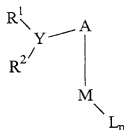
10. The ligand of claim 1 having the formula:



11. The ligand of claim 1 having the formula:



12. A polymerization catalyst containing a ligand of claim 1, and having the formula:



where

M is a transition metal;

L is a sigma bonded or pi bonded ligand;

n is an integer such that the valency of M is satisfied;

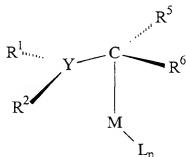
A is CH₂, CHR³, CR³R⁴, NR³, O, S, and PR³;

R¹ and R² are independently hydrogen, aryl, C₆₋₁₅ diarylphospho, C₁₋₁₈ alkylthio, C₆₋₁₅ arylthio, C₇₋₁₅ aralkyl, C₁₋₁₀ alkoxy, C₆₋₁₄ aryloxy, C₁₋₁₀ dialkylamino, or C₆₋₁₅ diarylamino;

R³ and R⁴ are independently hydrogen, C₁₋₈ alkyl, C₆₋₁₀ aryl, C₇₋₁₅ aralkyl, C₁₋₁₀ alkoxy, C₆₋₁₄ aryloxy, C₁₋₁₀ dialkylamino, or C₆₋₁₅ diarylamino; and

Y is B, Al, or Ga.

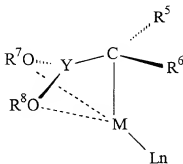
13. The polymerization catalyst of claim 12 having the formula:



where:

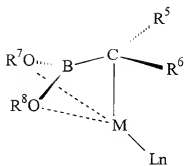
R⁵ and R⁶ are independently hydrogen, a C₁₋₈ alkyl group, C₆₋₁₀ aryl group, C₇₋₁₅ aralkyl group, C₁₋₁₀ alkoxy group, C₆₋₁₄ aryloxy group, C₁₋₁₀ dialkylamino group, or C₆₋₁₅ diarylamino group.

14. The polymerization catalyst of claim 12 having the formula:



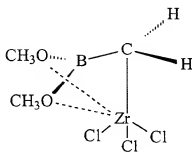
where R⁷ and R⁸ is hydrogen, a C₁₋₈ alkyl group, C₆₋₁₀ aryl group, or C₇₋₁₅ aralkyl group.

15. The catalyst of claim 12 having the formula:



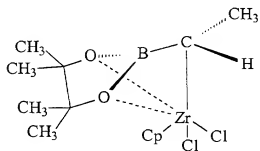
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16. The catalyst of claim 12 having the formula:



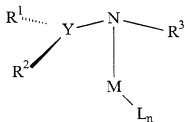
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17. The catalyst of claim 12 having the structure:



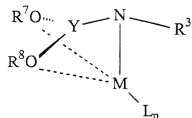
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18. The catalyst of claim 12 having the formula:



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19. The catalyst of claim 12 having the formula:



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where

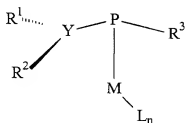
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R⁷ and R⁸ are independently a C₁₋₈ alkyl group, C₆₋₁₀ aryl group, or C₇₋₁₅ aralkyl group.

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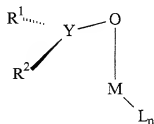
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20. The catalyst of claim 12 having the formula:

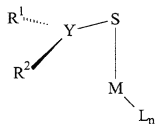


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21. The catalyst of claim 12 having the formula:



22. The catalyst of claim 12 having the formula:



23. A process for the oligomerization or polymerization of at least one α -olefin comprising polymerizing said at least one α -olefin in the presence of a polymerization catalyst component comprising the polymerization catalyst component of claim 12.

24. A polyolefin or oligoolefin prepared by the process of claim

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